

IV.J.9 Research & Development for Off-Road Fuel Cell Applications (New Project)

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Subcontractors:

Donaldson Company

The Toro Company

University of California, Davis

Objective

- Develop, design, and validate air filtration technology and methods to protect proton exchange membrane (PEM) fuel cell systems from mechanical stresses.

Technical Barriers

This project addresses the following technical barrier from the Fuel Cells section of the Hydrogen, Fuel Cells and Infrastructure Technologies Program Multi-Year Research, Development and Demonstration Plan:

- P. Durability

Approach

The project team will use a time-proven collection of analytical techniques, testing methodologies and design appliques used by the aerospace industry to develop an air filtration device complemented with impulse and vibration-abatement components and materials. They will characterize the concentration and distribution of contaminants found in off-road environments, experimentally determine the impact of pervasive contaminants on fuel cell performance and longevity, and design a filtration/purification system to mitigate the impact of common off-road contaminants on PEM fuel cell life and performance. In parallel, the project team will work to suppress noise that is emitted by component air compressors.

Deliverables include interim and final technical reports, education and outreach for market development and eventual sales, and a commitment to conduct the final power plant design and integration with off-road vehicles. Commercial targets are off-road vehicles, including turf and grounds maintenance vehicles, construction and farm equipment.